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ABSTRACT

Whenever possible, handicapped children are to be brought into schools with normal children. However, specialized facilities are needed as well. Design requirements for specialized facilities and recent research findings on the effects of the environment on behavior and attitude are topics covered in 12 entries in an annotated bibliography and six citations in a supplementary bibliography. All entries are from the ERIC system. (MLF)

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FEBRUARY 1977

FACILITIES FOR SPECIAL EDUCATION 14

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FACILITIES FOR SPECIAL EDUCATION

Except for a few lingering details, the debate over mainstreaming has been decided. Handicapped children are to be brought into schools with normal children. Much recent literature has concentrated on how existing school facilities can be prepared to meet the challenges of this new clientele. But it must not be forgotten that specialized facilities are still needed as well.

Handicapped children cannot reach out to their environment as easily as other children. No matter how brilliant they are, they suffer from a form of experiential deprivation that puts them at a disadvantage from the beginning of their school years. Preschool facilities designed with these difficulties in mind can make entrance into the mainstream easier for the mildly handicapped child as well as increase the chances for successfully teaching those more severely disabled.

Separate facilities for the severely learning disabled may always be necessary. Those with perceptual and emotional problems that prevent socialization and those so severely retarded that they cannot enter into the mainstream will need special care. This care may take many forms, from the local day school to the residential institution.

Disabled children who are successfully mainstreamed will also need additional care to a greater or lesser degree. Physical therapy facilities, special educational equipment rooms, and spaces for socializing, privacy, counseling, diagnosis, and observation can be built into normal facilities or in some cases will require separate buildings.

Those who enter medical facilities for extended periods require access to education as well as to physical treatment. These children are often more widely varied in ability and disability than those in

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any other single grouping, and spaces must be especially flexible to accommodate their indefinite stays.

Wherever the facilities are, there are still many questions left unanswered about how they should be designed. It is generally accepted that communication between architects and educators has not been effective enough in the past. Both groups can be held accountable for the failure. Still, it is less important to decide who should learn the language of the other than to realize that the communication must work both ways. Teachers and administrators both have a great practical knowledge of the problems of special education, but architects can only offer solutions if they are aware of *all* the details. Similarly, educators cannot suggest innovative programs that require special new facilities if they are unaware of new technology making such construction feasible. The architect must inform the educator of the options.

Once communication is established, the questions of design must be addressed. Would this particular group of children learn best in a windowless gray room, freed from distractions? On the other hand, what are the psychological implications of a windowless gray room to a child suffering from the perceptual disorders accompanying a condition such as schizophrenia?

Should facilities be designed as progressively harder for the handicapped to use, to prepare them for life outside the special facility? Or should the environment be made as easy as possible for the handicapped to function in, so they can concentrate on the work of education? Can requiring a handicapped child to cope with the obstacles of the normal world be as likely to create a sense of resigned inferiority as to develop independence?

Under current and expected economic and staffing conditions, is ease of administration more or less vital than privacy and comfort for students or residents? Would a pleasant, carpeted, homelike atmosphere encourage good behavior or merely make maintenance more difficult?

Educators faced with immediate construction needs will not be happy to hear that definitive research on the effects of the environment on behavior and attitude has only begun. Still, the literature calling for such research at least raises the significant questions.

Those particularly interested in facilities for the handicapped will find related materials in the previous issue of the Educational Facilities Digest, titled "Facilities for Mainstreaming the Handicapped."

Abeson, Alan, and **Berenson, Bertram.** *Physical Environment and Special Education: An Interdisciplinary Approach to Research. Final Report.* Arlington, Virginia: Council for Exceptional Children, 1970. 307 pages. ED 056 423.

"Special education facilities are, for the most part, poorly designed and inadequately related to educational programing." Special educators view their spaces as "unalterable," though specific alterations may be necessary, while architects without sufficient knowledge of the field tend to be placed in charge of building programs. To improve these conditions, confirmed by a survey, the authors of this report offer recommendations in three areas: training, research, and government.

Both teachers and administrators need training in the effects that environment can have on the educational process. Understanding the environment will enable educators to make minor modifications in their current spaces with some degree of success and will also prepare them for participation in future facility planning and evaluation. Teacher involvement in these processes is painfully lacking at present. Administrators are more deeply involved but rarely are trained to understand their role in the process. Finally, the administrator and the architect each need to accept training in the language, interests, and weaknesses of the other.

Research efforts must concentrate on the evaluation of facility planning as a process and on measuring the effective use of the environment. Governmental responsibilities include provision of adequate funding and reevaluation of rigid space requirements that may not be suitable to special education.

Extensive appendixes include details of the project, several related documents, and abstracts of additional materials in the field. One appendix in particular consists of a report by two special consultants to the project, William M. Cruickshank and Herbert C. Quay. This report, titled "Learning and Physical Environment: The Necessity for Research and Research Design," states that little research has been done to show that children can learn better in innovative spaces or that teachers can teach more effectively. Special education facilities in particular suffer from the lack of adequate research. Children placed in these facilities and held back by them may be falsely diagnosed as slow developers.

Cruickshank and Quay suggest that two elements precede research design or actual construction. The first is the "program narrative," a very detailed statement developed by the teacher (*not* by administrators or planners), describing "everything which will be done educationally between teacher and children during the program." On the basis of this statement, the architect then develops an "architectural narrative," which translates specific needs and relationships into appropriate spaces.

This translation can be done only on the basis of suitable research. Learning and social behaviors that need to be altered must be carefully specified in measurable terms. Designs to test these measurements include those using control groups and several quasi-experimental designs using series of measurements over time.

Order from EDRS. MF $0.83 HC $16.73. Specify ED number.

Abeson, Alan, and **Blacklow, Julie,** editors. *Environmental Design: New Relevance for Special Education.* Arlington, Virginia: Council for Exceptional Children, 1971. 124 pages. ED 055 404.

"The role of the physical environment is not totally to serve a teacher, but rather to be available as a teaching tool or catalytic agent to enhance the entire education process." Unfortunately, according to data gathered by a special project of the Council for Exceptional Children, most special education facilities were originally designed for other uses. Programs operate in spite of rather than in response to the space. Training the staff in effective use of space and in making analyses for the information of designers and builders in the future could help alleviate many problems.

The limited capacity of handicapped children to gain knowledge and skill through sensory exploration of the environment must be recognized when planning the facility. The suggestions of the students, as well as of the teachers, staff, parents, and others, may form a valuable aspect of the planning process, though care should be taken not to commit the designers to meeting the ideals of everyone. Clear delineation of educational goals and expectations will help designers evaluate the suggestions they receive, as will a thorough description of the range of activities that spaces must accommodate. Selecting equipment and fitting education around it can be a big mistake.

Abeson and Blacklow set forth the views of several planners on the planning process, as well as provide notes on current research and ideas intended to stimulate innovative design.

Order copies from Council for Exceptional Children, 1920 Association Drive, Reston, Virginia 22091. $4.25. Also available from EDRS. MF $0.83 HC $6.01. Specify ED number.

Bayes, Kenneth. *The Therapeutic Effect of Environment on Emotionally Disturbed and Mentally Subnormal Children. A Kaufmann International Design Award Study, 1964-66.* 1967. 62 pages. ED 018 905.

"We can measure with a tape whether or not a man can reach something, but we must apply an entirely different set of standards to judge the validity of an individual's feeling of being cramped." With this quote from Edward T. Hall, Bayes raises the question of whether facilities can be designed to meet psychological as well as physical needs. He finds that environments can be not only merely nonrestrictive, but actually therapeutic, though research into how this can be achieved practically has only just begun.

For the emotionally and mentally handicapped, the configuration of space, the clarity of the surroundings, the scale of the facilities, and even furniture arrangements are particularly important. To further the understanding of these needs, Bayes first discusses such ideas as personal and territorial space and the psychology of perception, all of which may be profoundly distorted among the handicapped.

Document not available from EDRS or publisher.

Bayes, Kenneth, and **Francklin, Sandra,** editors. *Designing for the Handicapped.* 1971. 79 pages. ED 055 378.

This document is a compilation of articles on the facility needs of different groups of handicapped persons, written by some of the best-known specialists in the field. Cited as especially valuable by the editors are Kyo Izumi's comments on "the problem of design guidance."

Izumi cautions most strongly against the tendency of architects to base their plans on previous construction and on aesthetic precepts. Noting that the perceptions of the mentally ill are very often radically different from those of the average architect, Izumi adds that architects are not even trained to perceive functionally, despite their payment of lip service to the adage "form follows function." It is important for the educator to be aware of these shortcomings when working with architects and to consider plans not only in terms of an architect's fame or the impressiveness of the design, but also in terms of his or her own realization of the needs of the handicapped for an environment that is workable in its totality. Too often, according to Izumi, well-conceived elements are poorly joined together.

Other articles deal with facilities for the retarded, the blind, the deaf, the learning disabled, the maladjusted, and also the gifted and their often neglected special needs.

Order from the Society for Emotionally Disturbed Children, 1622 Sherbrooke Street, West, Montreal, Quebec, Canada H3H 1C9. $4.00.

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Address requests to EDRS, P.O. Box 190, Arlington, Virginia 22210.

Bednar, Michael J., and Haviland, David S. *The Role of the Physical Environment in the Education of Children with Learning Disabilities.* Troy, New York: Center for Architectural Research, Rensselaer Polytechnic Institute, 1969. 102 pages. ED 034 377.

Normal persons adapt fairly quickly to new environments, even when those environments are not particularly suited to the activities for which they are used. The mentally ill, neurologically handicapped, or psychologically impaired person may not be able to adapt. A room may seem strange and new every time it is entered. Mechanisms for screening out distractions may also be lacking. Bednar and Haviland believe that "the ability to adapt and to direct perception is a learned trait and falls within the educational spectrum." By controlling the environment, the educator can change behavior and even teach the ability to adapt in general.

Bednar and Haviland describe not only the nature of learning disabilities and of special education programs, but also the basic environmental variables—space, light, color, sound, texture, climate, and shape. These variables have been the subject of theoretical speculation but not enough hard research. The authors believe that when architects gain an understanding of the factors in special education and when educators have increased their awareness of the impact of the environment, creative dialogue will result. The facilities that grow out of this communication will serve as the testing ground so desperately needed in a field still largely unexplored.

Order MF from EDRS, $0.83. HC not available. Specify ED number.

Gordon, Ronnie. *The Design of a Pre-School "Learning Laboratory" in a Rehabilitation Center.* New York: Medical Center, New York University, 1969. 67 pages. ED 032 696.

It is extremely important to recognize that handicapped children share the same basic educational goals as normal children. The difference, as Gordon points out, lies in the additional obstacles that stand in the way of attaining those goals. Preschool or nursery facilities for the handicapped should be designed to provide a sound program for normal children, with modifications and adaptations to allow use by abnormal children. Concentration on the special needs of the exceptional child, rather than on the basic needs of all children, can lead to a design that is handicapping in its own way.

Gordon describes a project created to provide educational opportunities for young patients undergoing analysis and treatment at a medical center. The project also provides a learning laboratory where medical and paramedical personnel and learning specialists can study the comparative abilities and difficulties of normal and handicapped children both as individuals and as members of groups. His report includes drawings and photographs of specially designed equipment.

Order from EDRS. MF $0.83 HC $3.50. Specify ED number.

National Association for Retarded Children. *Architectural Contributions to Effective Programming for the Mentally Retarded. Conference Report of the Architectural Institute (Denver, Colorado, May 15-16, 1967).* New York: 1967. 69 pages. ED 041 407.

"Administration is a tool, not an end in itself, and the main thrust of the architectural effect, indeed the genius of the architect, should manifest itself in the environment he creates in the living quarters of the residents." This is just one of the reasons contributor Gunnar Dybwad cites for architects as well as educators to be part of the planning process. The architect's specialized knowledge of new materials and techniques can answer some of the many questions raised by the recent trend toward individualizing treatment. Maintaining the architect's involvement after construction, in such areas as interior design and furnishings, as well as making changes and improvements, can help assure the most effective use of a new facility's design. Such involvement also permits the architect a chance to observe the effectiveness of his concepts in practice.

Dybwad also stresses the fact that buildings designed for ease of administration and control of patients may themselves encourage the kind of antisocial reaction that provokes administrators to ask for even more control-oriented facilities in the future, creating a vicious circle directly opposed to the best interest of all concerned.

The other articles in this document also concentrate on the relationship between the architect and the programmer, with the general conclusion that greater cooperation between the two is desirable. Edwin Cromwell suggests that the consultant can effectively bridge the communications gap between the health care or education professional and the architect, serving as a translator for both.

John Garber concludes the presentations with the history of his group's analysis of the full range of factors to be considered in planning three new facilities. A particularly valuable technique involved creating three fictional characters whose entire lives were planned out to give the architects a better idea of what the range of facilities and services had to include, both within and without the institutions under consideration.

Order copies from National Association for Retarded Citizens, 2709 Avenue E, East, P. O. Box 6109, Arlington, Texas 76011. Free.
Also available from EDRS. MF $0.83 HC $3.50. Specify ED number.

Moore, Caroline, editor. *Preschool Programs for Handicapped Children: A Guidebook for the Development and Operation of Programs.* Eugene: Regional Resource Center for Handicapped Children, University of Oregon, 1974. 77 pages. ED 112 595.

If the preschool years are indeed "the most important years of learning in the child's life," as this guidebook quotes Jensen as saying, then the provision of adequate facilities for handicapped preschoolers is especially important. Private families too often lack the special equipment and training, not to mention the emotional readiness, necessary to give the handicapped child the extra attention needed to prepare him or her to enter the school-age years with the best chance for integration into the mainstream.

When existing structures are considered for renovation to meet the needs of this preschool training, more than minimum standards of building safety must be considered.

The building should be located close to the clients, since lengthy and tiring travel can reduce a child's receptivity to the program. An outdoor play area should be available. The site itself should increase the visibility of the program for purposes of raising community awareness.

The document covers several other aspects of designing preschool programs in an attempt to portray all the requirements in a logical step-by-step fashion.

Order from EDRS. MF $0.83 HC $4.67. Specify ED number.

Nellist, Ivan. *Planning Buildings for Handicapped Children.* London: Crosby Lockwood & Son, 1970. 127 pages. ED number not yet assigned.

"It would be absurd to pretend that buildings can do much towards solving the problem of mental handicap." Still, these buildings play an important role by providing an environment in which people can try to reach their potentials. Because of the unmeasurable nature of mental handicaps (which include such disparate conditions as mongolism, cerebral palsy, autism, hyperactivity, and others) and the particular local situations that must be considered, standard solutions are not as practical as simple understanding when it comes to generating designs. Perhaps the best general guideline is that flexibility of the space, to accommodate a changing clientele, must be coupled with an appearance of stability and security.

Providing a varied environment is particularly important, as is recognizing the greater-than-usual need for safety features such as windows that cannot be climbed out of and hot water that cannot get too hot. Nellist does a good job of pointing out the kinds of problems that usually come to light only *after* a facility has been in use for some time.

The book covers space arrangements both indoors and out, considerations of lighting, heating, building finishing, residential and nonresidential design, service facilities, and even the entire complex's relationship to the surrounding community.

Order copies from Crosby Lockwood & Son, Ltd., c/o Granada Publishing, Ltd., P. O. Box 9, 29 Frogmore, St. Albans, Hertford AL2 2NF, Great Britain. £ 4.

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Ontario Department of Education. *Special Education Facilities: Schools and Playgrounds for Trainable Mentally Handicapped Children.* Toronto: School Planning and Building Research Section, 1971. 25 pages. ED 058 688.

This document responds to a trend toward community-based day schools for the trainable mentally handicapped by presenting specifications and sample floor plans for schools of from two to eight rooms in size. These plans are designed with an eye toward future expansion. A homelike setting supporting individualized training is sought to make the educational process easier and more functional as well.

Classroom arrangements suitable for different age groups are also presented, and their general requirements in terms of size, capacity, equipment, and facilities are described. Washrooms, playrooms, kitchens for student use, craft rooms, playgrounds, and administrative, staff, and faculty areas are discussed briefly.

Order copies from School Planning and Building Research Section, Ontario Department of Education, Toronto, Ontario, Canada.
Order MF from EDRS, $0.83. Specify ED number.

"A Rehabilitation Center Designed with the Help of Wheelchairs." *Building Design & Construction,* 17, 2 (February 1976), pp. 44-46. EJ 132 520.

A group of architects used wheelchairs in their own offices and also attended classes, ate, and spent time with handicapped patients. As a result of this experience they substantially modified their original concepts for the construction of a new rehabilitation center. Their final plan is designed for the users of the building, with all patient facilities on one level.

The 40-bed patient wings, each curving around a central nursing area for easy access, are built in a sequence along one main hall. As patients progress toward recovery they are moved farther away from therapy and medical areas, in order both to encourage mobility and to give a sense of achievement. When they have progressed sufficiently to use the vocational/educational building, they must even brave the weather and problems with level changes, purposely built in to prepare users for the return to normal conditions.

Vosbeck, R. Randall. "Facilities for People Who Learn Differently." Paper presented at the American Association of School Administrators annual meeting, Dallas, February 1975. 12 pages. ED 108 347.

"In the development of both programs and facilities for exceptional children, there is an urgent need not only to think in terms of specific disabilities or problems, but also of *abilities*—what a student is *capable of*, what his *positive* potentials are." The central question that should be answered is not "How is the child disabled?" but "How does the child learn differently?" Only when educators convey their own positive outlook to designers can the designers' creative energies and knowledge be applied to developing facilities that are for educating rather than merely containing disabled children.

Vosbeck touches briefly on the continuing need for facilities for children who cannot be mainstreamed, on

problems of barriers, and on flexibility that supports rather than hinders programs. His concern for eliminating distractions in the environment and for providing traditional spaces for those who are "known" to function best in such spaces seems a bit conservative in light of some recent studies, but it remains unclear just how definitive he intends these particular prescriptions to be.

Order from EDRS. MF $0.83 HC $1.67. Specify ED number.

SUPPLEMENTARY BIBLIOGRAPHY

Baas, Alan M. *Environments for the Physically Handicapped. Educational Facilities Review Series, Number 8.* Eugene, Oregon: ERIC Clearinghouse on Educational Management, University of Oregon, 1972. 6 pages. ED 066 793 MF $0.83 HC $1.67. Provides a brief analysis of literature on facilities for the handicapped, including both basic building criteria and research into total environmental requirements as treated in 24 references from the ERIC system through early 1972.

Council for Exceptional Children. *Physical Facilities: A Selected Bibliography, Exceptional Child Bibliography Series No. 634.* Reston, Virginia: Information Center on Exceptional Children, 1973. 27 pages. ED 084 765 MF $0.83 HC $2.06. Contains approximately 100 abstracts of documents reflecting thinking prior to 1973 on the full range of facilities for the handicapped. Some but not all are available through the ERIC system.

Florida State Department of Education. *Florida's Educational Facilities for Exceptional Children 1968-1973.* Tallahassee: Education for Exceptional Children Section, 1973. 90 pages. ED 085 945 MF $0.83 HC $4.67. A five-year plan to provide appropriate education to Florida's exceptional children resulted in 131 projects, several of which are described in this document. Included are special building wings designed to meet a number of different needs and built as adjuncts to regular schools, as well as facilities for trainable children.

Markun, Patricia Maloney, editor. *Play Scapes: Two Case Studies.* Washington, D.C.: Association for Childhood Education International, 1973. 19 pages. ED 089 467 MF $0.83 HC not available from EDRS. (Available from Association for Childhood Education International, 3615 Wisconsin Avenue, N.W., Washington, D.C. 20016. $1.50). Three brief articles stress the design of play areas as places to learn and to exercise social and motor skills. Incorporation of therapeutic concepts into barrier-free designs can make activities once considered work desirable and enjoyable.

Rogerson, Robert W. K. C., and Spence, Philip H. *A Place at Work. The Working Environment of the Disabled.* 1969. 207 pages. ED 046 163. Document not available from EDRS. (Available from Robert Mac Lehose and Company, Ltd., University Press, Glasgow W.3, Scotland.) Facilities are described for preparing the disabled to enter the working world, beginning with day schools and ending in commercial establishments. Examples from Europe are cited. Specifications for equipment and a discussion of costing considerations are included.

University of California. *Educational Facilities for the Visually Handicapped.* Berkeley, California: Department of Architecture, 1966. 217 pages. ED 028 617 MF $0.83 HC $11.37. In an attempt to raise the designing of educational facilities for the multiply handicapped blind above the level of simply "rearranging" the component parts of the design problem, 18 architecture students spent a year breaking the problem down into its simplest parts, analyzing their results, and applying their discoveries as totally new solutions to the problem. The document will be of greatest value to the architect seeking an understanding of the complex nature of this particular design question.

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